

Claims

1. A system for improving the performance of a distance-type protective relay for power systems, wherein the relay includes a calculation circuit responsive to voltage and current values from the power line to produce a quantity analogous to the distance between the relay and a fault on the power line, wherein the quantity is applied to a distance element for comparison of said quantity with a setting reach value for a selected zone of protection, the system comprising:

a filter circuit responsive to said quantity for filtering said quantity before the quantity is applied to the distance element, resulting in the smoothing of the quantity; and

a control circuit for controlling the application of the filtered quantity to the distance element such that the filtered quantity is applied only when said quantity is above a preselected first threshold value.

2. The system of claim 1, wherein the preselected first threshold value is a selected percentage of the setting reach value.

3. The system of claim 2, wherein the selected percentage is 100% minus the error of the system plus 5% for the relay.

4. The system of claim 2, wherein the selected percentage is 100% minus the total or error of the system and 5%.

5. The system of claim 2, wherein the selected 5 percentage is approximately 92%.

6. The system of claim 1, wherein said quantity is a high value, significantly higher than said setting reach value, when there is no fault on the power line, and wherein the system includes a circuit for precharging the filter to a second selected value when said quantity decreases to a selected threshold value from said high value, in response to a fault.

7. The system of claim 4, wherein the threshold value is approximately four times the setting reach value.